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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

December 9, 2010

TO: Internal File

THRU: Jim Smith, Permit Supervisor

FROM: Steve Christensen Environmental Scientist SKC

RE: 2010 2nd Quarter Water Monitoring, Consolidation Coal Company, LLC, Emery Deep Mine, C/015/0015, WQ10-2, Task ID #3561

The Emery Deep Mine is an active coalmine. The coal mining operation utilizes room and pillar mining techniques with the use of a continuous miner machine. The coal reserves are fully extracted (thus falling into the planned subsidence category).

The approved Mining and Reclamation Plan (MRP) outlines the water monitoring requirements beginning on page VI-28. Table VI-17, *Emery Mine Hydrologic Monitoring Program* contains a comprehensive list of all groundwater (springs/seeps), surface water, groundwater monitoring wells and Utah Pollutant Discharge Elimination System (UPDES) outfalls. Plate VI-4, *Ground Water Monitoring Well and Surface Water Monitoring Site Location Map* depicts the locations of the various ground and surface water monitoring sites (including the UPDES discharge/outfall points).

1. Was data submitted for all of the MRP required sites? YES ☒ NO ☐

Springs

The MRP outlines the sampling of 5 springs within the permit and adjacent area. Flow and field parameters are sampled quarterly with water quality samples collected in the 2nd and 3rd quarters.

The Permittee submitted data for all required springs: SP-10, SP-11, SP-13, SP-14 and SP-15.

Streams

The MRP outlines the sampling of 8 surface water monitoring stations within the permit and adjacent area. Surface water monitoring site SWMS-1 is actively monitored; however, not listed in the MRP.

Data was submitted for all of the required stream monitoring sites.

Wells

The MRP outlines the sampling of 33 ground water monitoring wells within the permit and adjacent area. Of the 33 wells, 14 are monitored quarterly for water level only. The remaining 19 wells are sampled for water quality on a quarterly basis with the exception of wells RDA-1, RDA-2, RDA-3, RDA-4, RDA-5 and RDA-6 (sampled annually in the second quarter for both field parameters and water quality).

Six of the 33 well installations (AA, H, I, R2, T1 and T2)) contain clusters of casing completed to different depths within the underlying strata. Well AA contains four completions (AA-B, AA-L, AA-M and AA-U). Wells H and I contain four completions as well (H-B, H-L, H-M, H-U and I-B, I-L, I-M and I-U respectively). Well R2 contains three completions (R2-B, R2-M and R-U). Well T1 contains two completions (T1-B and T1-U). Well T2 contains two completions as well (T2-B and T2-U).

The Permittee submitted data for all required wells.

UPDES

The Emery Deep Mine's UPDES Permit, #UT0022616, identifies 9 outfalls (001, 002, 003, 004, 005, 006, 007, 008 and 009). The discharges from each of the outfalls ultimately report to Quitchupah Creek, a tributary of Muddy Creek. The receiving waters are designated according to Utah Administrative Code (UAC) R317-2-13.1 as 2B, 3C and 4. Historically, only Outfalls 001 and 003 have ever recorded a discharge.

The Water Quality Board for the Division of Water Quality (DWQ) has approved a rule change that would allow for a site specific, in-stream standard for the Emery Deep's effluent limitations. The modified standard will establish an allowable TDS concentration of 3,800 parts per million (ppm) and a 2,000-ppm concentration of sulfate. DWQ representatives have indicated that they are waiting for Environmental Protection Agency (EPA) approval before the permit is modified from it's current standard of 3,500-ppm.

DWQ has been in negotiations with the Permittee for several years regarding a modification to their existing UPDES permit. The Permittee has entered into a compliance schedule as allowed under the rules of the Clean Water Act to modify their permit. The compliance schedule would produce a site-specific standard for the Emery Deep UPDES permit.

The Permittee submitted data for all required UPDES sites. Outfalls 001 and 003 were the only to report a discharge for this quarter.

2. Were all required parameters reported for each site? YES ☒ NO ☐

Spring Monitoring Sites

All required data was submitted for the five spring monitoring sites (as outlined in Table VI-17).

Surface Water Monitoring Sites

All required data was submitted for the eight stream monitoring sites (as outlined in Table VI-17).

Water Monitoring Wells

All required data was submitted for the 33 water monitoring wells (as outlined in Table VI-17).

UPDES Monitoring Sites

All required data was submitted for the outfalls that produced a discharge (001 and 003).

3. Were any irregularities found in the data? YES ☒ NO ☐

Water Monitoring Wells

T1-B reported elevated concentrations for chloride (Cl), total alkalinity (T-Alk), dissolved potassium (D-K) and bicarbonate (Bicarb). Elevated concentrations for Cl, T-Alk, D-K and Bicarb were reported during the 2nd quarter for 2009 which suggests a seasonal influence. Continued monitoring will be conducted.

Monitoring well FC346WW reported a depth to water outside of two standard deviations for the third straight quarter.

Monitoring well RDA-2 reported a reduction in Cl concentration outside of two standard deviations from the mean.

Monitoring well RDA-5 reported an increase in T-Alk outside of two standard deviations.

Monitoring well SM1-3 reported an elevated concentration of D-Fe, and corresponding reductions in T-Alk and Bcrb.

UPDES Sites

Historically outfalls 002, 004, 005, 006, 007, 008 and 009 do not produce a discharge. These outfalls did not report a flow for this quarter.

Outfalls 001 and 003 are the primary outlets for discharging the ground water encountered within the mine works.

TDS values for Outfall 001 were again, far above the established UPDES criteria with an average value of 4,310 ppm reported for the quarter. However; TSS and T-Fe values remain within compliant levels.

Outfall 003 reported elevated TDS values this quarter as well with an average concentration of 3,435.8 ppm. As with Outfall 001, the remaining UPDES parameters for Outfall 003 remained well within the established compliance levels.

The compliance schedule process (that is ongoing with the Division of Water Quality) has identified a future compliance standard for Emery Deep discharge water into Quitchupah Creek of 2,000 ppm for SO4. UPDES outfall 001 reported five concentrations of SO4 over the 2,000 ppm future compliance standard with an average of 2,448.2 ppm. Based on five sampling events, UPDES outfall 003 exceeded the 2,000 ppm limit one time with a maximum concentration of 2,027 ppm and an average of 1,932.6 ppm for the quarter.

4. On what date does the MRP require a five-year re-sampling of baseline water data.

There is no commitment in the MRP to resample for baseline parameters.

5. Based on your review, what further actions, if any, do you recommend?

Continue to monitor the compliance schedule process currently underway between the Permittee and DWQ.

Follow up with Permittee regarding the missing water quality data and work to ensure that the approved water monitoring plan is being adhered to.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES ☒ NO ☐

A notice of violation (NOV #10071) was issued to the Operator on October 6th, 2010. The NOV was issued for failing to provide the required water monitoring data as outlined in Table VI-17 of the approved MRP. Based upon conversations with mine representative Jaren Jorgensen, the water monitoring requirements outlined in Table VI-17 are now being adhered to (beginning in the 2nd quarter of 2010). All required data was submitted for the water monitoring sites outlined in Table VI-17.

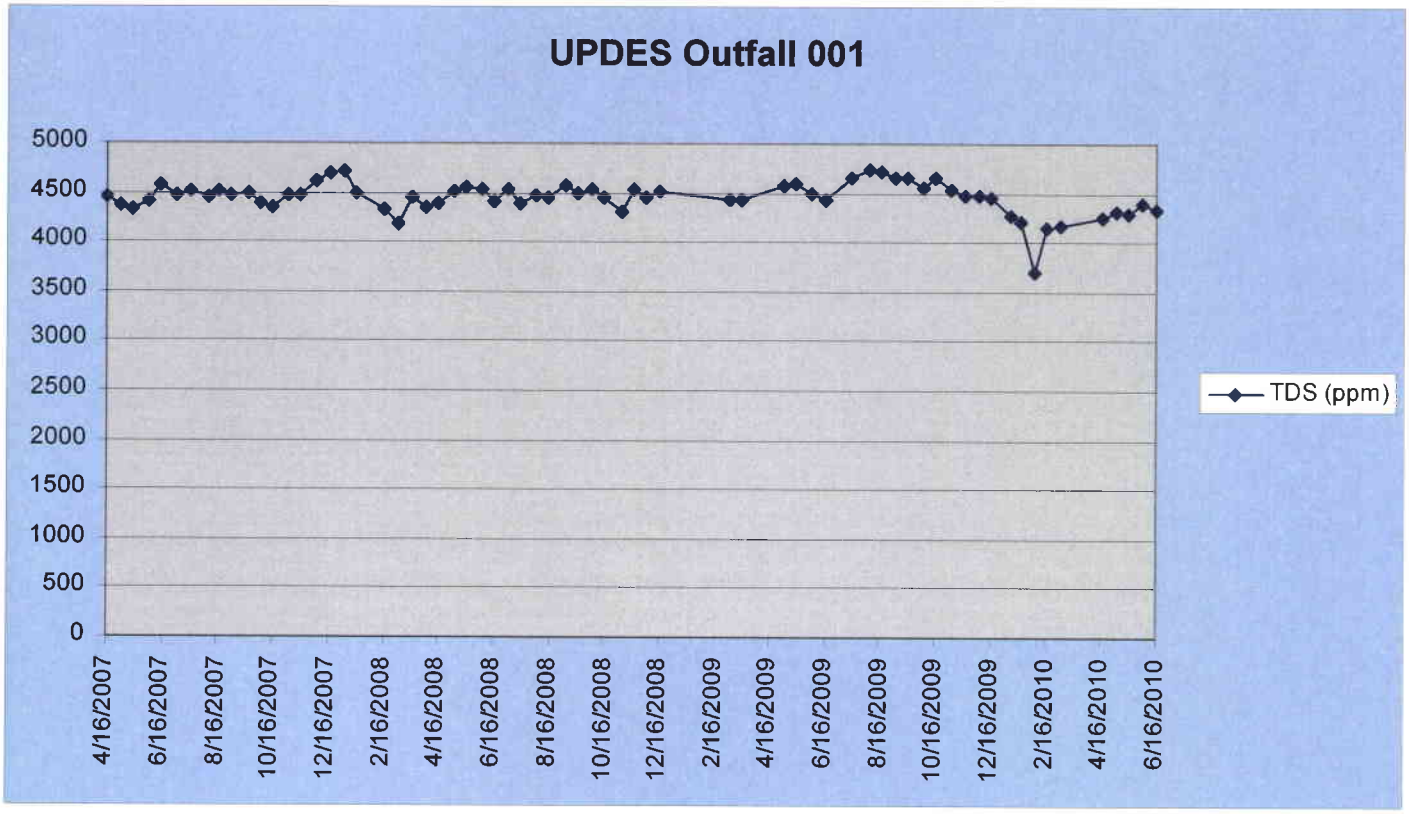
Additionally, the Permittee has been working with Castle Valley Special Services District to rehabilitate the two Emery Town wells. The rehabilitation is necessary in order to monitor water level and water quality. As the wells provide the only back-up source of culinary water to the town of Emery, the Permittee and Castle Valley Special Services District are working together to ensure that proper monitoring may be conducted in order to identify when potential mining related impacts occur.

7. Follow-up from last quarter, if necessary.

Work with Permittee in inputting missing data into the EDI and work to insure that the Permittee understands the water monitoring requirements as outlined in the approved Mining and Reclamation Plan (MRP).

8. Did the Mine Operator submit all the missing and/or irregular data?

No.


UPDES Outfall 001
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
4/16/2007
6/16/2007
8/16/2007
10/16/2007
12/16/2007
2/16/2008
4/16/2008
6/16/2008
8/16/2008
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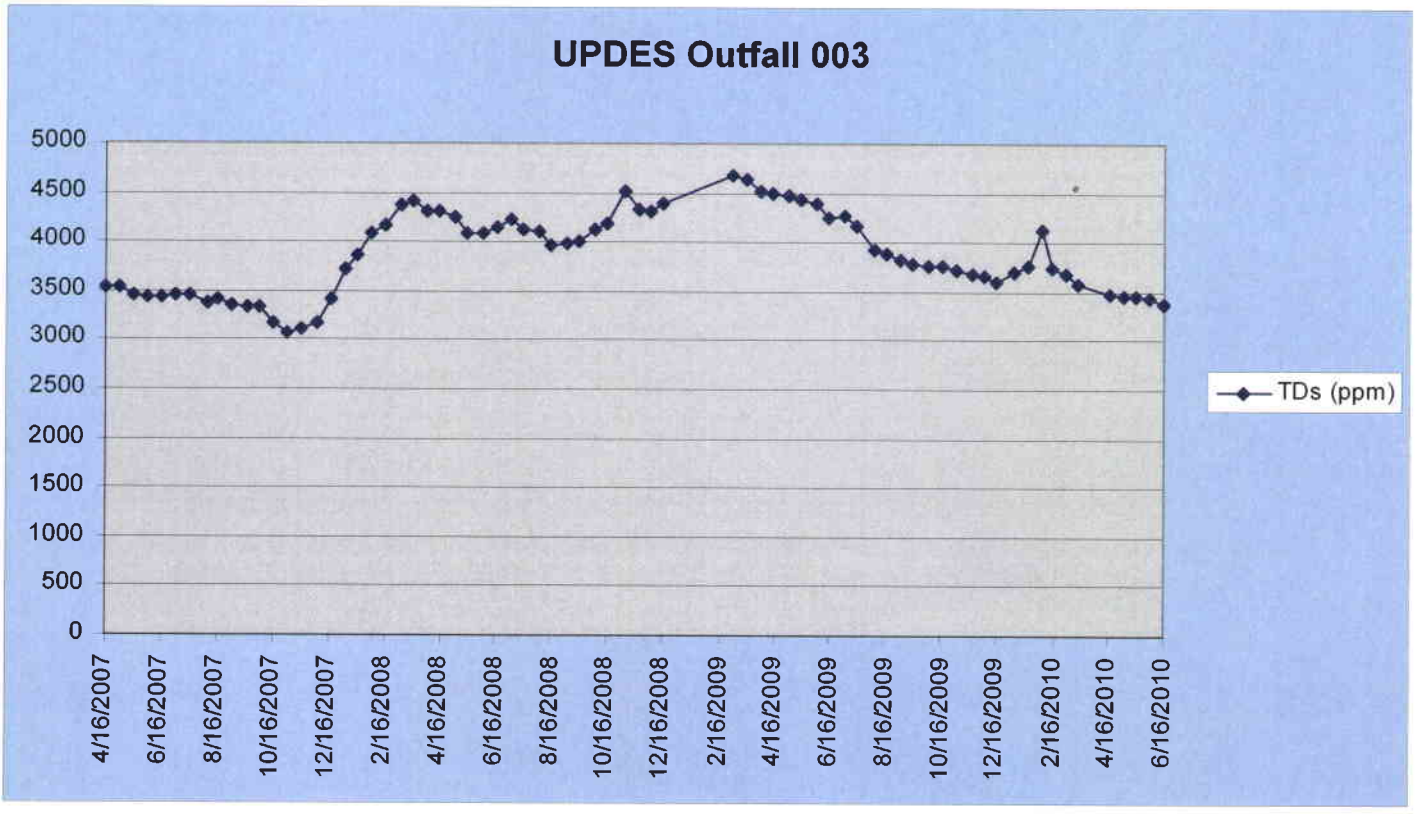
6/16/2010
TDS (ppm)


UPDES Outfall 003
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
4/16/2007
6/16/2007
8/16/2007
10/16/2007
12/16/2007
2/16/2008
4/16/2008
6/16/2008
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4/16/2010
6/16/2010
TDs (ppm)